Proposed Agreement between California Energy Commission and California State University, Fresno Foundation

Title: Methodology for Characterizing Desert Streams to Facilitate Permitting Solar Energy Projects
Amount: $297,948.00
Term: 26 months
Contact: Joe O`Hagan
Committee Meeting: 3/16/2011

Funding

FY	Program	Area	Initiative	Budget	This Project	Remaining Balance	
10	Electric	EA	Terrestrial Resources	$1,500,000	$297,948	$1,202,052	80%

Recommendation

Approve this agreement with California State University, Fresno for $297,948. Staff recommends placing this item on the discussion agenda of the Commission Business Meeting.

Issue

Permitting large-scale solar electricity generation facilities in arid and semi-arid regions of California and elsewhere requires an assessment of environmental impacts. However, the lack of protocols for developing accurate and reliable natural resource maps represents a critical information gap that profoundly affects the permitting process. This is particularly true in the case of episodic streams (i.e., ephemeral and intermittent streams) which are the predominant stream type in arid and semiarid - or "dryland" - environments.

Background

Executive Order S-14-08 directs state government agencies to take all appropriate actions to help achieve California's Renewable Portfolio Standard (RPS) goal, which requires retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020. Renewable energy developments are important for achieving this ambitious RPS goal and can have large land and water requirements and can have negative impacts on delicate ecosystems and vulnerable species, particularly in the desert. To help address this issue, the Energy Commission and California Department of Fish and Game (DFG) are developing a science-driven Desert Renewable Energy Conservation Plan (DRECP) to identify best locations for development in the Mojave and Colorado Deserts of California.

The Public Interest Energy Research (PIER) Environmental Program Area convened a group of biologists familiar with desert biological issues to evaluate research topics that would help facilitate renewable siting and permitting in the desert as well as the DRECP. This informal advisory group included staff from the Energy Commission's Siting Division, PIER, and the chair of the DRECP Independent Science Advisors and determined there was a need for research addressing the uncertainties encountered in delineating dryland riparian systems and the associated delays in permitting and development.

Because episodic streams are scarce in arid and semi-arid regions, it is of the utmost importance that they be managed and well protected whenever possible. However, these complex hydrologic systems are difficult to delineate and therefore are commonly overlooked during project planning. Numerous project histories document how projects that did not incorporate the fluvial processes particularly flooding, erosion, and deposition, into their design and operation, often required costly remediation measures to protect project performance and initial capital investments.

Project development in dryland landscapes ultimately depends on recognizing the types and extent of stream processes active on the landscape, yet there is no consistent and scientifically based method to delineate dryland environments dominated by episodic stream systems. The transfer of commonly used concepts, theories and practices without considering how these processes vary in active dryland streams, has proven problematic - most recently in the siting decisions and permitting process associated with solar array projects in the drylands of California.

Proposed Work

The goal of the proposed research is to develop a consistent and comprehensive method to characterize and delineate the active watercourse processes and boundaries of episodic stream forms in the dryland environment. The method will be developed and tested at California locations identified by the U.S. Department of Energy and U.S. Bureau of Land Management (BLM) for in-depth study of proposed, utility-scale solar energy projects such as Imperial East, Iron Mountain, Pisgah, and Riverside East.

The objectives of the proposed research are to: 1) produce a scientifically based, geomorphic and ecological stream delineation method that project applicants or their representatives can use to inform the design and development of sustainable, low-impact projects in dryland environments; 2) facilitate renewable energy project permitting by providing agencies and project applicants a rigorous and uniform delineation protocol; 3) develop a consistent method for evaluating the type and extent of off-site mitigation for dryland streams; and 4) provide a formalized methodology with broad application for use in siting and permitting development projects, developing land use and resource management plans, and evaluating land use and resource management practices.

Justification and Goals

This project "[will develop, and help bring to market] advanced electricity technologies that reduce or eliminate consumption of water or other finite resources, increase use of renewable energy resources, or improve transmission or distribution of electricity generated from renewable energy resources" (Public Resources Code 25620.1.(b)(4)), (Chapter 512, Statues of 2006)).

The proposed research will result in a dryland stream delineation methodology that will facilitate the timely permitting of renewable energy projects. It will benefit the state and ratepayers by advancing the state's RPS goal and providing data to assist the DRECP, which will help ensure that the desert's renewable energy projects can provide clean energy and jobs to California residents in a timely, sustainable, and environmentally responsible manner.

This project also addresses Governor Schwarzenegger's Executive Order S-14-08 and recommendations contained in the 2009 Integrated Energy Policy Report by reducing the uncertainty associated with licensing new renewable projects.

This will be accomplished by:

- Developing a dryland stream delineation methodology that will facilitate the timely permitting of renewable energy projects.